

III. Statement of Course Need

- A. This course provides students with detailed instructions on computer systems (hardware and software). Students will explore what a computer is and what it does, what data is and how it is organized, the different types of computers in use today, and the advantages and disadvantages computers present to society. Students will delve in depth into the operations of the Central Processing Unit. They will also be able to recognize by sight the various components of the system unit and name its principal function. Throughout the course students will spend a considerable amount of time studying different input, output and storage devices.

In this course students will receive an overview of the topics discussed in other CIS courses. For instance, students will learn about various computer applications, such as the Microsoft Office Suite. Discussions will be held about different programming languages, especially regarding those taught at Raritan Valley Community College. They will also be introduced to computer networking, systems analysis, and systems software.

In this course students will receive hands-on training in programming in the Java language. Students will be required to use the Java programming skills they acquire throughout the course to analyze real problems, design a solution, write the program, and finally test and debug the program. Students will master such algorithm design tools as structure charts, pseudo code, and flowcharts.

The skills acquired throughout this course are a valuable asset in other computer science or programming courses students may take at Raritan Valley Community College or at other institutions of higher learning. The set of skills they acquire while learning to program in Java serve as the foundation for programming in other computer languages.

- B. This course has a weekly lab component. The lab is essential for providing students hands on programming to write Java programs that solve a set of problem requirements.
- C. This course generally transfers as a Computer Science Elective or substitutes for an equivalent course at many four year institutions

IV. Place of Course in College Curriculum

- A. Free Elective (This applies automatically to all college level credit courses in the College.)
- B. This is a General Education Elective course that satisfies Technological Competency
- C. This course is a Programming Elective on the Computer and Programming Electives List

- D. This course meets a degree requirement for: ~~Computer Networking (A.A.S.)~~, Computer Programming (A.A.S.), Game Development (A.A.S.), Information Systems & Technology – Track 1 (A.S.), Information Systems & Technology (A.A.S.), Interactive Digital Media (A.A.S.), ~~Management Information Systems (A.S.)~~, Mathematics (A.S.), Medical Assistant, Certificate, Interactive Digital Media & Web Development (A.S.), Computer Networking and Cybersecurity Certificate—~~all options~~, Computer Programming Certificate, ~~Computer Support Certificate~~, Interactive Digital Media & Web Development Certificate
- E. This course is a program option in: Computer Programming (A.A.S.), Mathematics (A.S.), Medical Assistant Certificate
- F. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

A. INTRODUCTION

1. What is the computer and what does it do
2. Types of computers
3. Social Issues brought upon by Computers

B. HARDWARE

1. The computer system
2. The CPU and how it works
3. Binary and Hexadecimal Numbering systems
4. Input Devices
5. Secondary Storage
6. Printers and Display Devices

C. SOFTWARE

1. The Operating System
2. Utility Programs

D. COMPUTER NETWORKS

1. Telecommunication Applications in use Today
2. Network Topologies
3. LANs and WANs and other Networks

E. INFORMATION SYSTEMS

1. Computer Systems commonly found in Organizations
2. The Systems Development Life Cycle
3. Application Software development process

F. PRODUCTIVITY SOFTWARE

1. Word Processing and Desktop Publishing
2. Spreadsheets and Presentation Graphics
3. Database Management

G. PROGRAMMING USING JAVA

1. Introduction to Structured Programming and Problem Solving
2. Variables and Declarations
3. Input and Output Statements
4. Control Structures
5. Programming for Repetition (Loop Structures)
6. Methods, Debugging and Testing
7. Writing Classes and instantiating Objects
8. Arrays, Searching and Sorting

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

At the completion of the course, students will be able to:

1. Solve information processing problems by using the Java Programming Language to produce well designed computer programs to (GE-NJ 4)
2. Produce findings in writing using the Internet and various technology databases such as the ACM Digital Library for research on computer topics (GE-NJ IL, GE-NJ 1).
3. Recognize and articulate the ethical issues surrounding the use of computers in society (GE-NJ ER)

B. Course Learning Outcomes:

At the completion of the course, students will be able to:

1. Describe how the CPU interacts with internal hardware, peripheral hardware, and communication hardware.
2. Demonstrate how data is represented in a computer system in terms of binary and hexadecimal and be able to convert values between decimal, binary and hexadecimal.
3. Identify various system software, utility software, and application software in terms of role, features, and functionality.

4. Identify systems development techniques like the Systems Development Life Cycle.
5. Apply programming constructs such as input and output statements, decision structures and loops, methods, Objects, arrays and sorting algorithms in Java.
6. Use algorithm design methods as a model for the writing, debugging, and testing of a Java program to solve a problem.

C. Assessment Instruments

1. Weekly homework assignments
2. Exams and Quizzes
3. Mid-term and Final Examinations
4. In-class Programming Laboratories
5. Programming Projects
6. Term Paper

VII. Grade Determinants

- A. Weekly homework assignments
- B. Exams
- C. Quizzes
- D. In-class Programming Laboratories
- E. Programming Projects

Methods for teaching and learning that may be used in the course:

- A. Lecture/discussion
- B. Programming exercises (Labs and Projects)

VIII. Texts and Materials

- A. All-In-One Computer Concepts and Programming, Pearson Collection, 2018

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

- A. Computer Lab for classroom instruction and exercises
- B. Technology Support (Java installed on the workstations in the Computer Lab along with a text editor such as NetBeans or other equivalent java editor.)

X. Honors Option

N/A